WHAT IS CLAIMED IS:

1. A process for preparing a double-metal cyanide catalyst comprising:

combining

i) at least one metal salt;

ii) at least one metal cyanide salt;

iii) at least one organic complexing ligand;

iv) at least one alkaline metal salt; and

v) optionally, at least one functionalized polymer;

under conditions sufficient to form a catalyst.

2. The process of Claim 1 in which the metal salt is zinc chloride.

3. The process of Claim 1 in which the metal cyanide salt is potassium hexacyanocobaltate (III).

4. The process of Claim 1 in which the organic complexing ligand is tert-butyl alcohol.

5. The process of Claim 1 in which the alkaline metal salt is potassium chloride, sodium chloride, sodium bromide, lithium chloride or lithium bromide.

6. The process of Claim 1 in which the functionalized polymer is present in an amount in the range of from about 2 to about 98 wt. %, based on the total weight of the double-metal cyanide catalyst.

7. The process of Claim 1 in which the functionalized polymer is a polyether; polyester; polycarbonate; polyalkylene glycol sorbitan ester; polyalkylene glycol glycidyl ether; polyacrylamide; poly(acrylamide-co-acrylic acid), polyacrylic acid, poly(acrylic acid-co-maleic acid), poly(N-vinylpyrrolidone-co-acrylic acid), poly(acrylic acid-co-styrene) or their salts; maleic acid, styrene or maleic anhydride copolymers or their salts; polyacrylonitriles; polyalkyl acrylate; polyalkyl methacrylate; polyvinyl methyl ether; polyvinyl ethyl ether; polyvinyl acetate; polyvinyl alcohol; poly-N-vinylpyrrolidone; polyvinyl methyl ketone; poly(4-vinylphenol); oxazoline polymer; polyalkyleneimine; hydroxyethylcellulose;

polyacetal; glycidyl ether; glycoside; carboxylic acid ester of polyhydric alcohol; bile acid or its salt, ester or amide; cyclodextrin; phosphorus compound; unsaturated carboxylic acid ester; or an ionic surface- or interface-active compound.

8. The double-metal cyanide catalyst prepared by the process of Claim 1.

9. The double-metal cyanide catalyst of Claim 8 which is comprised of at least one alkaline metal salt in an amount within the range of from about 0.4 to about 6 wt .%, based on the total weight of the double metal cyanide catalyst.

10. A process for preparing a polyol comprising:

combining

i) at least one starter compound which has active hydrogen atoms; with

ii) at least one oxide;

in the presence of

iii) at least one double-metal cyanide catalyst prepared according to the process of Claim 1;

under conditions sufficient to form a polyol.

11. A polyether polyol prepared by the process of Claim 10.

12. A polyester polyol prepared by the process of Claim 10.

13. A polyetherester polyol prepared by the process of Claim 10.

14. A double-metal cyanide catalyst having the general formula

$M^1_x([M^2_{x'}(CN)_y]_z \cdot [M^3_{(x)(y)}]) \cdot L^1 \cdot L^2 \cdot M^4_z$

wherein

M^1 represents at least one metal salt;

M^2 represents at least one metal cyanide salt;

M^3 represents at least one transition metal salt;

M^4 represents at least one alkaline metal salt;

L^1 represents at least one organic complexing ligand;

L^2 is optional and can represent at least one functionalized polymer;

and

x, x', y and z are integers and are chosen such that electroneutrality of the double-metal cyanide catalyst exists.

15. The double metal cyanide catalyst of Claim 14 in which the metal salt is zinc chloride.

16. The double metal cyanide catalyst of Claim 14 in which the metal cyanide salt is potassium hexacyanocobaltate (III).

17. The double metal cyanide catalyst of Claim 14 in which the organic complexing ligand is tert-butyl alcohol.

18. The double metal cyanide catalyst of Claim 14 in which the alkaline metal salt is potassium chloride, sodium chloride, sodium bromide, lithium chloride or lithium bromide.

19. The double metal cyanide catalyst of Claim 14 in which the functionalized polymer is present in an amount in the range of from about 2 to about 98 wt. %, based on the total weight of the double-metal cyanide catalyst.

20. The double metal cyanide catalyst of Claim 14 in which the functionalized polymer is a polyether; polyester; polycarbonate; polyalkylene glycol sorbitan ester; polyalkylene glycol glycidyl ether; polyacrylamide; poly(acrylamide-co-acrylic acid), polyacrylic acid, poly(acrylic acid-co-maleic acid), poly(N-vinylpyrrolidone-co-acrylic acid), poly(acrylic acid-co-styrene) or their salts; maleic acid, styrene or maleic anhydride copolymers or their salts; polyacrylonitriles; polyalkyl acrylate; polyalkyl methacrylate; polyvinyl methyl ether; polyvinyl ethyl ether; polyvinyl acetate; polyvinyl alcohol; poly-N-vinylpyrrolidone; polyvinyl methyl ketone; poly(4-vinylphenol); oxazoline polymer; polyalkyleneimine; hydroxyethylcellulose; polyacetal; glycidyl ether; glycoside; carboxylic acid ester of polyhydric alcohol; bile acid or its salt, ester or amide; cyclodextrin; phosphorus compound; unsaturated carboxylic acid ester; or an ionic surface- or interface-active compound.

21. The double-metal cyanide catalyst of Claim 14 in which alkaline metal salt is present in an amount within the range of from about 0.4 to about 6 wt .%, based on the total weight of the double metal cyanide catalyst.

22. A process for preparing a polyol comprising:

combining

i) at least one starter compound which has active hydrogen atoms; with

ii) at least one oxide;

in the presence of

iii) at least one double-metal cyanide catalyst of Claim 14;

under conditions sufficient to form a polyol.

23. A polyether polyol prepared by the process of Claim 22.

24. A polyester polyol prepared by the process of Claim 22.

25. A polyetherester polyol prepared by the process of Claim 22.